Work Order ID 74574

Monday, October 03, 2011 8:26:16 AM

Item ID: D212-664-207TRN
Revision ID:
Item Name: Crosstube Turning Detail

Start Date: 10/3/2011 **Start Qty:** 1.00
Required Date: 10/28/2011 **Req'd Qty:** 1.00
Reference:

Accept **Setup Start** **Stop**

Cust Item ID:
Customer:

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**
QC: **Date:** **SPC (Y/N):** **Date:**

Run Start **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp

Draw Nbr	Revision Nbr
D212-664-247	Rev B

100 0.00

Mori Seiki

MORI SEIKI CNC LATHE LARGE

Mori Seiki CNC Lathe Large

Memo 0.00

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA706
2-Turn first side as per Folio FA706
3- File transition lines smooth.
FOLIO REV: A
DWG REV: B

1 Ø
mm.c 11/10/12

110 QC1- Inspect dimensions to dimension sheet 0.00

QC

Quality Control

Memo 0.00

1 Ø
mm.c 11/10/12

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
			Corrective Action Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
DATE	**STEP**	**Description of NC** Section A	**Initial** Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 74574

Monday, October 03, 2011 8:26:16 AM

Item ID: D212-664-207TRN **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Crosstube Turning Detail

Start Date: 10/3/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 10/28/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

Stop

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	MORI SEIKI CNC LATHE LARGE	0.00				6			
Mori Seiki	**Memo**	0.00							
Mori Seiki CNC Lathe Large	1-Turn second side as per Folio FA706 2- File transition lines smooth. 3-Remove sand and plugs FOLIO REV: A DWG REV: B								
130	QC1- Inspect dimensions to dimension sheet	0.00				9			
QC	**Memo**	0.00							
Quality Control									
140	QC8- Inspect parts - second check	0.00							
QC	**Memo**	0.00							
Quality Control									

11/10/12

11/10/12

DP 11-10-12

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Work Order ID 74574

Monday, October 03, 2011 8:26:16 AM

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Revision ID:

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Start Date: 10/3/2011 **Start Qty:** 1.00 **Cust Item ID:**

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Reference:

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:** **Run Start** **Stop**

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
145		0.00							
Crosstubes									
Crosstubes	**Memo** REMOVE CIRCUUMFENTIAL MARKS BEFORE CHEMICAL CONVERSION	0.00							
150	Crosstubes Chemical Conversion	0.00							
HandFXtube									
Hand Finishing Crosstubes	**Memo**	0.00							
160	QC3- Inspect Part Finish	0.00							
QC									
Quality Control	**Memo**	0.00							

MO 11/10/18

JW 11-10-18

DP 11-10-19

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

Work Order ID 74574

Monday, October 03, 2011 8:26:16 AM

Item ID: D212-664-207TRN **Accept** **Setup Start** **Stop**

Revision ID:

Item Name: Crosstube Turning Detail

Start Date: 10/3/2011 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 10/28/2011 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start **Stop**

Approvals: **Process Plan:** **Date:** **Tooling:** **Date:**

QC: **Date:** **SPC (Y/N):** **Date:**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Packaging	0.00							
Packaging									
Packaging	**Memo**	0.00							
	Identify and stock in kanban rack Location: LG								
180	QC21- Final Inspection - Work Order Release	0.00							
QC									
Quality Control	**Memo**	0.00							

JW 11-10-19

11/10/19 dd

MF 11-10-19

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

Picklist Print

Monday, October 03, 2011 8:26:13 AM

Work Order ID: 74574

Parent Item: D212-664-207TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 10/3/2011 **Required Date:** 10/28/2011

Start Qty: 1.00 **Required Qty:** 1.00

Comments: IPP Rev:A New Issue 08-03-06 DD verified by:ec
IPP Rev B 08.04.02 Removed polish EC verified DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6008-132		Manufactured	No			110	Each	9.6500	1	1			
Crosstube extrusion													

Location	Loc Qty	Loc Code	
LG	9.65		
50892	0.65		
57660	3		
58414	6		1

mm·L 11/10/11

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	**STEP**	**PROCEDURE CHANGE**	**By**	**Date**	**Qty**	**Approval** Chief Eng / Prod Mgr	**Approval** QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	**STEP**	**Description of NC** Section A	**Corrective Action** Section B			**Verification** Section C	**Approval** Chief Eng	**Approval** QC Inspector
			Initial Chief Eng	**Action Description** Chief Eng	**Sign & Date**			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	14574
Description: Crosstube Assembly (205/212 Low Aft)	Part Number:	D212-664-247
Inspection Dwg: D212-664-247 **Rev:** B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

	Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	0.438	+/-0.010	.442	✓		vern	ver CWC-06
	2.680	+0.005/-0.000	2.685	✓		"	
	2.680	+0.005/-0.000	2.685	✓		"	
	2.687	+0.005/-0.000	2.697	✓		"	
	2.802	+0.005/-0.000	2.806	✓		"	
	2.906	+0.005/-0.000	2.910	✓		"	
	3.009	+0.005/-0.000	3.014	✓		"	
	3.112	+0.005/-0.000	3.115	✓		"	
	3.250	+0.005/-0.000	3.250	✓		"	
SIDE B	0.438	+/-0.010	.442	✓		vern	CWC-06
	2.680	+0.005/-0.000	2.685	✓		"	
	2.680	+0.005/-0.000	2.685	✓		"	
	2.687	+0.005/-0.000	2.692	✓		"	
	2.802	+0.005/-0.000	2.807	✓		"	
	2.906	+0.005/-0.000	2.909	✓		"	
	3.009	+0.005/-0.000	3.012	✓		"	
	3.112	+0.005/-0.000	3.115	✓		"	
	3.250	+0.005/-0.000	3.250	✓		"	
	128.268	+/-0.030	128.260	✓		tape	TH-05

Measured by:	MM.L	Audited by:		Preliminary Approval:	N/A
Date:	11/10/11	Date:	11-10-17	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	08.11.07	New Issue (P/O D212-664-207)	KJ/EC	
B	10.04.01	Dwg Rev updated	KJ	
C	10.08.03	Dimension 128.268 was 128.27	KJ	

Item	Qty -247	Qty -247B	Part Number	Description
1	X		D212-664-247	CROSSTUBE ASSEMBLY (205/212 LOW AFT)
2		X	D212-664-247B	CROSSTUBE ASSEMBLY (214 LOW AFT)
3	1	1	D6008-132	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	2	2	D3660-1	CUFF
7	4	4	MS21920-28	CLAMP (OR MS21920-30)
8	44	44	CR3212-4-06	RIVET (OR M7885/3-4-06)
9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
10	A/R	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

1) MATERIAL: MANUFACTURED FROM D6008-132
   FINISHED LENGTH = 128.268±0.020 (BEFORE BENDING/TRIMMING)
2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
   PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
   PAINT OUTSIDE PER DART QSI 005 4.2
3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
4) UNITS: INCHES UNLESS OTHERWISE NOTED.
5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
7) WEIGHT: D212-664-247 = 36.6 lbs (PER IIN-D212-664)
   D212-664-247B = 36.6 lbs (PER IIN-D212-664)
8) PART IS SYMMETRIC ABOUT CENTERLINE.
9) WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.
10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
16) INSTALL D3660-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
17) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

DEO ATTACHED

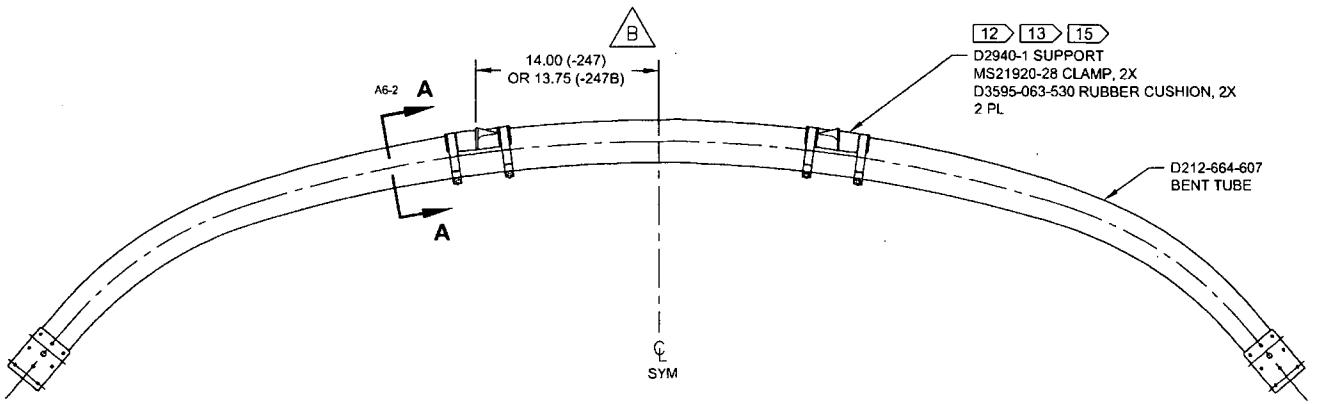
DCN# 11-614
11.07.28

UNDER REVIEW
QP 11.06.13

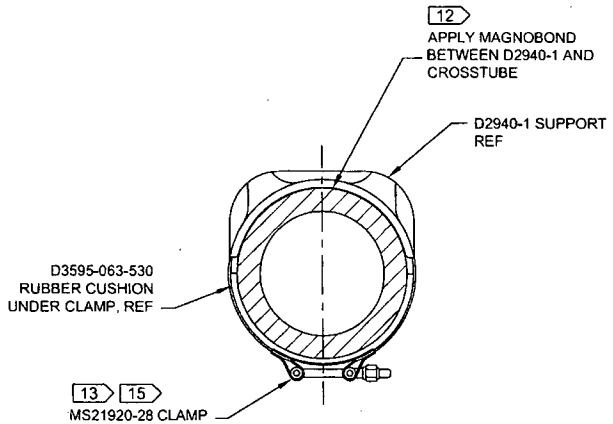
RELEASED
2009 -10- 29
MP

REV.	DESCRIPTION	BY	DATE
B	REVISE GENERAL NOTES/PART LIST; UPDATE TO CURRENT STANDARDS; ADD -247B (ZN C4-2, D5-2)	RF	09.09.30
A	NEW ISSUE	CP	07.07.07

DESIGN	QP	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	QP	DRAWING NO.	REV. B
MFG. APPR.		D212-664-247	SHEET 1 OF 4
APPROVED	MP	TITLE	SCALE
DE APPR.		CROSSTUBE (205/212 LOW AFT)	NTS
DATE	09.09.30		



D212-664-247/-247B
ASSEMBLY DETAIL B



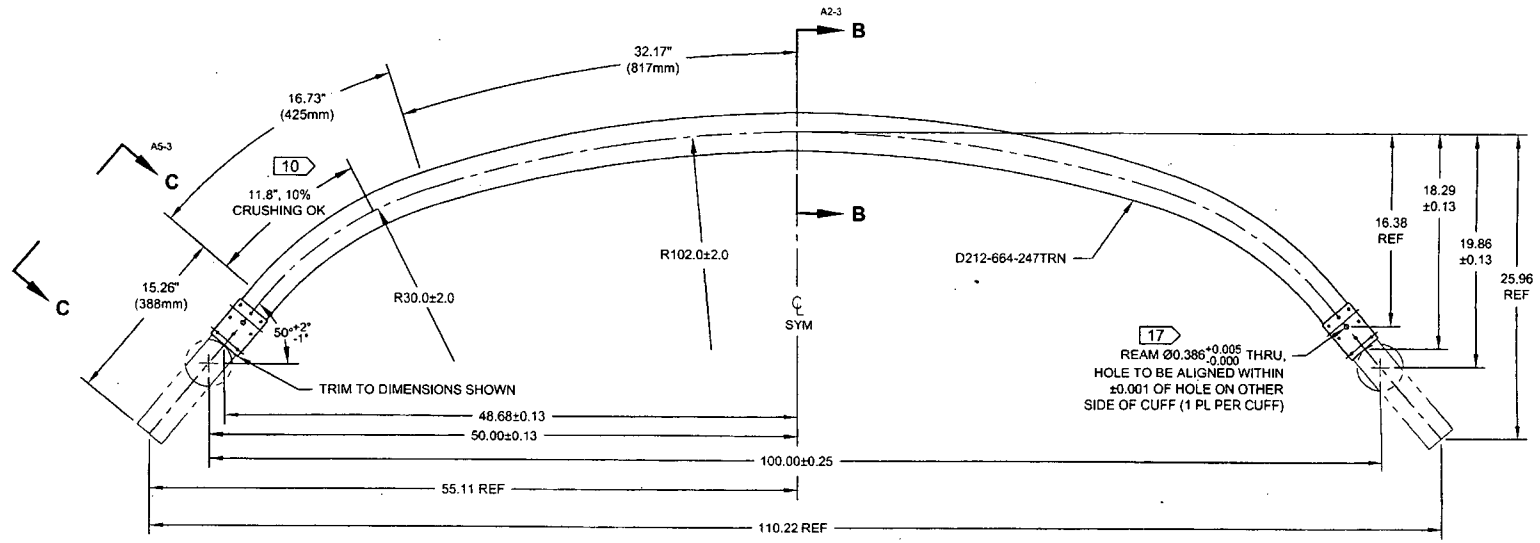
SECTION A-A D6-2
SCALE 4X

DEO ATTACHED
ECN # 11.644
11.09.28

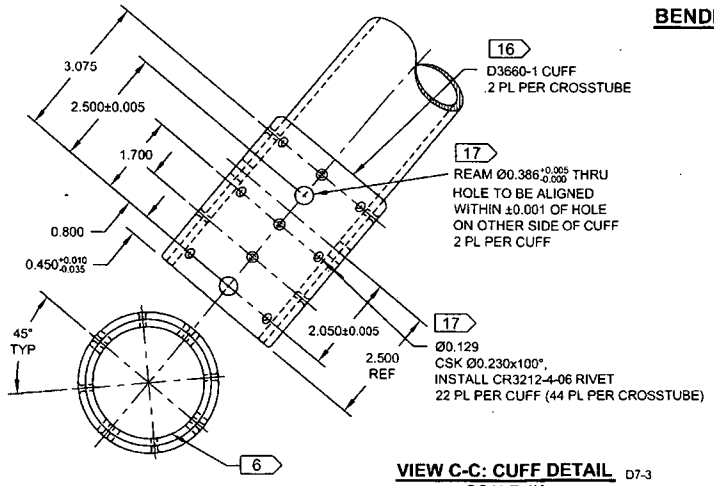
UNDER REVIEW
11.06.13

RELEASED
2009 -10- 29

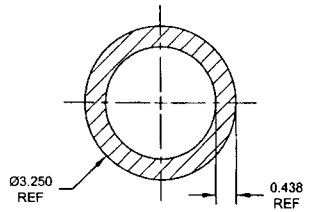
DESIGN		**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D212-664-247	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (205/212 LOW AFT)	NTS
DATE	09.09.30		



D212-664-607
BENDING AND DRILLING DETAIL 10 B



VIEW C-C: CUFF DETAIL D7-3
SCALE 4X



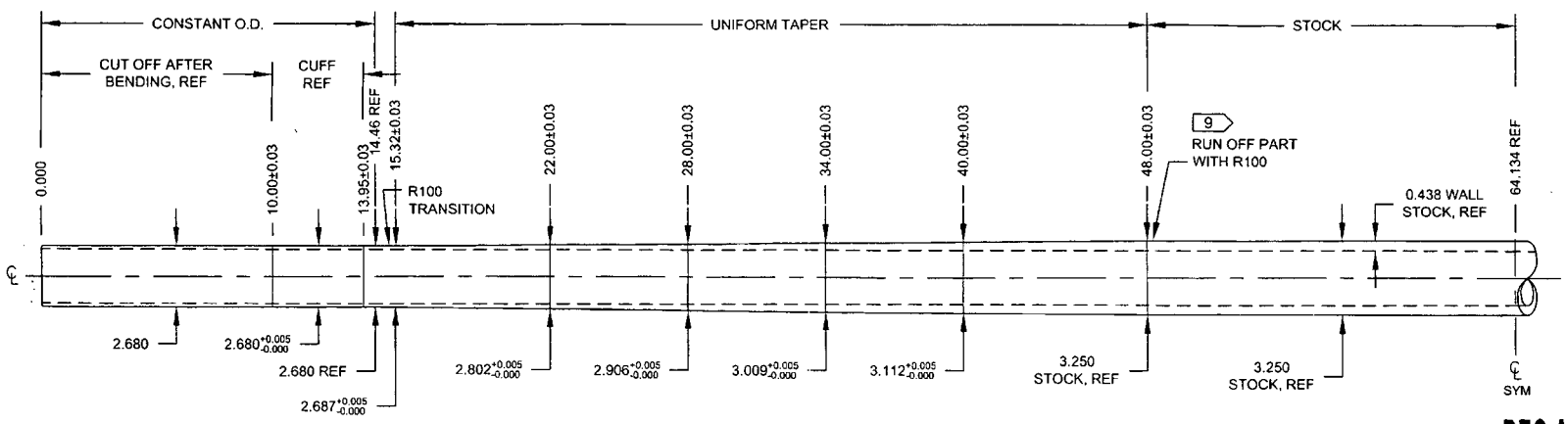
SECTION B-B D4-3
SCALE 4X

DEO ATTACHED

UNDER REVIEW
11.06.13

RELEASED
2009 -10- 29

DESIGN		DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D212-664-247	SHEET 3 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (205/212 LOW AFT)	NTS
DATE	09.09.30		



D212-664-247TRN
TURNING DETAIL

DEO ATTACHED
ECO #11-614
11.07.28

UNDER REVIEW
11.07.13

RELEASED
2009 -10- 29

DESIGN		**DART AEROSPACE LTD**	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. B
MFG. APPR.		D212-664-247	SHEET 4 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE (205/212 LOW AFT)	NTS
DATE	09.09.30		

DRAWING NO.	TITLE	REV. B	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D212-664-247	CROSSTUBE ASS'Y (205 LOW AFT)		ENGINEERING ORDER	D212-664-247-B-1	SHEET 1 OF 1	NTS

DRAWN	CHECKED	MFG. APPR.	APPROVED	DE APPR.
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21	DATE 11.07.21

PURPOSE:
REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -247	Qty -247B	Part Number	Description
9	A/R	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

12) TO INSTALL D2940-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28